

PREY OF ROBBER FLIES OF THE GENUS STENOPOGON

(Diptera: Asilidae)

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The genus *Stenopogon* is one of the dominant groups of rather large robber flies found in the western United States; only one species is known east of the Mississippi Valley. These flies are strong and active hunters and rather indiscriminate in their choice of food. The writer has just finished classifying the material in the collection of the California Insect Survey, where 20 of the 23 known California species are represented; it is quite evident from this study that the species *S. rufibarbis* Bromley is the most abundant and widespread in California, and most of our prey records refer to this species.

Robber flies feed on a vast array of insects, piercing their prey with a strong beak (hypopharynx) and sucking the body fluids from soft bodied flies and butterflies or heavily armored beetles. Many species are attracted to social Hymenoptera for their food, or to many of the solitary wasps and bees; there is even a record of a large *Pepsis* wasp having been taken by an asilid, *Saropogon* (Hurd, 1952:269). Bromley published several lists of the prey of different species, beginning in 1914, and found that some asilids "specialized," while others were general feeders.

The fragile little robber flies of the genus *Leptogaster* usually attack small ground spiders or winged aphids; certain species of *Stichopogon* also prey on small spiders. The huge flies of the genus *Proctacanthus* often capture butterflies and grasshoppers, but also rely on honeybees for food. Banks (1913) noted that many robber flies preferred to try for their food among the Hymenoptera. Linsley (1944) published a paper on the prey of the asilid *Callinicus calcaneus* in California; here the prey consisted entirely of megachilid and andrenid bees, with an apparent preference for the bright colored *Osmia* species rather than the more abundant but dull colored *Andrena* species.

Melin (1923) published a most complete work on the biology of the Swedish asilids, in which he described the habits of practically all of the known species of Sweden; he described the speci-

¹ The writer is indebted to several entomologists for the determination of asilid prey. Dr. Herbert Ruckes determined the Hemiptera, Dr. Paul D. Hurd, Jr. named the Hymenoptera and miscellaneous and Jerry A. Powell the Lepidoptera.

alized mouth structures of the species and furnished excellent illustrations.

The battle for life and food does not always go to the robber fly, as various observers have noted that large web-spiders or large wasps may capture and kill the predatory asilid flies. Bromley (1914) saw a *Crabro* wasp capture and kill the large *Erax aestuans*. Harshbarger (1894) describes a combat between a large American Mantis, *Stegomantis carolina*, and a large species of *Asilus*, which ended in the robber fly losing his legs and his proboscis and escaping when the observer interfered!

We have four prey records for *Stenopogon breviusculoides* Bromley, all from central California; the most interesting is the capture of the mantid, *Litaneutria minor* (Scudder), a specimen taken by Hurd. The same species of robber fly captured the large bombyliid fly *Poecilanthrax arethusa* O. S. and a small bee of the genus *Lasioglossum* (specimens collected by Hurd). There is also one record of the capture of a honeybee (specimen collected by W. C. Bentinck).

In his "Robberflies of Texas" (1934) Bromley recorded the prey of three species of *Stenopogon*. The species *aeacidinus* Williston took a small syrphid fly, a blister beetle (*Epicauta*), a smaller male robber fly of its own species and a stink bug, *Thyanta custator* Fabricius. The asilid *S. latipennis* was captured with a small grasshopper nymph of *Melanoplus* and a different stink bug, *Chlorochroa uhleri* Stål. The asilid *S. subulatus* Wiedemann was taken with a female grasshopper of the genus *Melanoplus*.

In July, 1946, Paul Hurd and Ray F. Smith noticed many specimens of a *Stenopogon* fly while sweeping alfalfa patches at Cedarville and Lake City in Modoc County, California. The species of fly proved to be *S. rufibarbis* Bromley. Seventeen specimens of this robber fly were captured with honey bees (there was a hive near the alfalfa field), some of the predators had taken other insects and a few were without prey. One fly had taken the bee *Anthophora urbana* Cresson, one had taken a winged ant of the genus *Formica*. This species of robber fly was taken with the rhagionid fly, *Dialysis lauta* Loew, at Strawberry, Tuolumne County, California, July 20 (W. C. Bentinck), also with the brilliant colored beetle, *Dichelonyx* sp. in Hope Valley, Alpine

County, California (J. W. MacSwain) and with the beetle *Serica anthracina* Le Conte at Sonora Pass, 9000 feet, Tuolumne County, and Summit Camp, Lassen County, California, June (Hurd). This common asilid was recently taken at Strawberry, California, June, with the bug *Peribalus tristis* Van Duzee as prey.

Two other species of *Stenopogon* in the survey collection have been pinned with prey. *S. cazieri* Brookman was taken with the small butterfly, *Strymon saepium* Boisduval, San Antonio Valley, California, June (C. D. MacNeill). *S. obscuriventris* Loew was taken with the brilliant blue beetle, *Chrysocha cobaltina* LeConte, at Mt. Laguna, San Diego County, California, July (B. J. Adelson), also taken with a green pentatomid, *Thyanta pallidovirens* Stål, in Del Puerto Canyon, Stanislaus County, California, April (Hurd).

LITERATURE CITED

BANKS, N.

1913. Asilids catching Hymenoptera. Proc. Ent. Soc. Wash., 15:51.

BROMLEY, S. W.

1914. Asilids and their prey. Psyche, 21:192-198.
 1923. Observations on the feeding habits of robber flies. Part I. *Proctacanthus rufus* Will. and *P. brevipennis* Wied. Psyche 30:41-45.
 1930. Bee-killing robber flies. Jour. N. Y. Ent. Soc., 38:159-175.
 1934. The robber flies of Texas. Ann. Ent. Soc. Amer., 27:74-110.
 1936. Asilids feeding on bumblebees in New England, Psyche, 43:14.
 1946. The Diptera or true flies of Connecticut. Asilidae. Third Fascicle, Part VI, 3-4 (on prey).

HARSHBARGER, W. A.

1894. The bold Robber fly and the Mantis. Ent. News, 5:169.

HURD, PAUL D. JR.

1952. Revision of the Nearctic species of the Pompilid genus *Pepsis* (Hymenoptera, Pompilidae). Bull. Amer. Mus. Nat. Hist., 98: 257-334.

LINSLEY, E. G.

1944. Prey of the robber fly *Callinicus calcanus* Loew. Pan-Pac. Ent., 20:67-68.

MELIN, D.

1923. Contributions to the knowledge of the biology, metamorphosis and distribution of the Swedish asilids. Zool. Bid. från Uppsala, 8: 7-53 (on prey).